

PATENT COOPERATION TREATY



From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

NII, Hiromori
NII Patent Firm, 3rd Floor,
Shin-Osaka Suehiro Center Bldg.
11-26 Nishinakajima
3-chome, Yodogawa-ku
Osaka-shi, Osaka 532-0011
JAPON

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WRITTEN OPINION

(PCT Rule 66)

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Applicant
MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD. et al.

1. This written opinion is the **first** drawn up by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application
3. The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 30.01.2005

Name and mailing address of the international preliminary examining authority:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized Officer

Günther, S

Formalities officer (incl. extension of time limits)
Barrio Baranano, A
Telephone No. +49 89 2399-8621



I. Basis of the opinion

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*):

Description, Pages

1-34 as originally filed

Claims, Numbers

1-31 as originally filed

Drawings, Sheets

1/15-15/15 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
 - ☐ the language of publication of the international application (under Rule 48.3(b)).
 - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority in written form.
 - ☐ furnished subsequently to this Authority in computer readable form.
 - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.
4. The amendments have resulted in the cancellation of:
- ☐ the description, pages:
 - ☐ the claims, Nos.:
 - ☐ the drawings, sheets:
5. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

6. Additional observations, if necessary:

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	
Inventive step (IS)	Claims	1-31
Industrial applicability (IA)	Claims	

2. Citations and explanations**see separate sheet**

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:

D1: US-A1-2002103898

D2: SEN S, SOLLEE P, MARCH S: <draft-sen-midcom-fw-nat-01>: Midcom unaware NAT / Firewall Traversal, IETF Internet Draft (04-2002), pages 1-15

1.1. Notwithstanding the clarity issues (see 3.), the subject-matter of independent claims 1, 27, 29-31 of the present application can not be considered as involving an inventive step (Article 33(3) PCT) for the following reasons.

1.2. Document D1 discloses with regard to most of the features of claim 1 (the references in parentheses applying to this document):

A home terminal apparatus ("Networked Appliance", paragraph [0073]) for sending / receiving packet data ("messages", paragraph [0073]) to and from a router ("residential gateway in form of ... Network Address Translator (NAT)", paragraph [0073] and Fig. 3) that is connected to an external network ("wide area network 300", paragraph [0073] and Fig. 3) to which a server apparatus is connected ("external proxy 108", paragraph [0087] and Fig. 4), the home terminal apparatus being connected to the router via a home network ("home domain", paragraph [0073]), comprising:

- a packet generation unit operable to generate packet data to be sent to the server apparatus ("device ... IP capable", paragraph [0073];
- a protocol determination unit operable to determine a communication protocol used between the home terminal apparatus and the server apparatus ("request may be sent using UDP or TCP or SCTP transport", paragraph [0054]); and
- a communication unit ("SIP user agent", paragraph [0015]) operable to send / receive the packet data to and from the server apparatus via the router ("user agent client ... sends SIP requests ... user agent server ... accepts requests ... and sends back responses", paragraphs [0015-

0016]),

wherein

- the protocol determination unit determines that the home terminal apparatus should communicate with the server apparatus using
- a first communication protocol ("UDP or TCP or SCTP", paragraph [0054]) when the communication unit sends address notification packet data ("REGISTER requests", paragraph [0019]) generated by the a packet generation unit to the server apparatus ("Registrar ... co-located with a Proxy", paragraph [0019]) periodically and repeatedly at a predetermined sending interval via the router, and
- a second communication protocol ("UDP or TCP or SCTP", paragraph [0054]) when the communication unit sends / receives control information ("method called DO", paragraphs [0051-0053]) to and from the server apparatus (see bidirectional message exchange (1)-(6) in the scenario shown in Fig. 12).

1.3. The subject-matter of claim 1 in the present application differs from the disclosure in document D1 in that the apparatus of claim 1 is furthermore adapted to send address data **periodically and repeatedly** at a predetermined sending interval.

1.4. The objective technical problem to be solved by the invention is to **prevent additional SIP proxy functionality in the RGW** for controlling RGW functions (i.e., NAT) in order to avoid additional costs.

1.5. Starting from the disclosure in D1, the skilled person will look for alternative arrangements in which SIP messages traverse NATs. Knowing very well that both SIP and NAT are standardised at the Internet Engineering Task Force (IETF), and that the IETF working group "midcom" primarily focuses on the application of middle box architectures, he will immediately find D2. By now simply enhancing said home terminal apparatus of D1 by the additional SIP "PING" feature of D2, "PING" keep-alive messages sent periodically to a designated server (page 8, lines 3-11; page 12, lines 6-20), the skilled person will arrive at the subject-matter of claim 1 without involving any inventive activity.

1.6. Independent apparatus claim 27 includes all the features of apparatus claim 1

and, furthermore, some additional features. However, document D1 also discloses according to all these additional features:

- the server apparatus includes a second communication unit operable to send / receive packet data ("proxy server ... acts as both a server and a client for ... for making requests", paragraph [0017])
- the server apparatus includes a second packet generation unit operable to generate packet data to be sent to the home terminal apparatus ("in an internet context, the proxy server receives ... sends ...", paragraph [0017]).

For this reason, the arguments stated above with regard to claim 1 are also valid for claim 27. Therefore, claim 27 does also not fulfil the requirements of Article 33(3) PCT.

- 1.7. Independent claim 29 relates to a method, which entirely corresponds to the non-inventive subject-matter of apparatus claim 27.
- 1.8. Independent claims 30-31 relate to computer software products, which entirely correspond to the non-inventive subject-matter of method claim 29.
2. Dependent claims 2-26 and 28 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, the reasons being as follows:
 - 2.1. The connection request from the protocol determination unit to the server to establish a session when a notification has been received indicating an occurrence of a control request, the receipt of the control data over the established connection using the second protocol in claims 2, 28, the retrieval of the control request data in claim 5, the generation and sending of a notification packet by the server in claim 13 are all obvious combinations of sending a SIP session invitation or notification, setup of a standard TCP session and application data exchange over a SIP session.
 - 2.2. The protocols UDP and TCP of claim 3 are known from D1, whereby UDP is obviously the first protocol as D2 defines "PING" to be a "lightweight SIP method" (page 8, lines 3-11) and TCP appears to be the better choice for the second protocol since D1 points out a need for "guaranteed reliability" (paragraph [0054]).

- 2.3. The management units to manage a validity certificate and to send it according to claim 4, the authentication units to authenticate a server according to claim 6, 7, 19 and to authenticate the terminal apparatus according to claim 20 are obvious from the well-known SIP security concerns and standard SIP message integrity and access control methods (D1, "RFC2543", paragraphs [0013] and [0022]).
- 2.4. It is obvious from the SIP standard (D1, paragraph [0013]) to destroy packets according to a predetermined interval of claim 8, since SIP already foresees to discard packets in servers when a registration has been expired.
- 2.5. The encryption unit and the channel encryption in claim 9, 21 are known and the use of SSL in claim 10 is obvious from D1 (paragraph [0454-0455]) since SSL is just another alternative method to encrypt links over networks.
- 2.6. The control unit of claim 11 is known from D1 as "appliance controller" (paragraph [0092]).
- 2.7. The plurality of apparatuses and apparatus control units connected to the home terminal apparatus in claim 12 is obvious from D1 (paragraph [0002]).
- 2.8. The mobile terminal device being capable to send control requests, the second packet generation unit preparing and the second communication unit operable to send the notification packet of claims 14, 18, 28 as well as the communication unit operable to send / receive the control data of claim 15, 16, 17, 28 are an obvious combination of the SIP event notification mechanism in D1 (paragraph [0030]) and the "remote control" scenarios D1 (paragraphs [0093-0101], Figs. 2-7).
- 2.9. The additional features terminal information storage unit to store terminal address data, extraction unit to extract terminal address data and second packet generation unit to generate control requests including that extracted address information server apparatus in the server according to claim 18 are obvious from D1 (paragraphs [0093-0094], Fig. 5).
- 2.10 The server connected to the external network including second packet generation and second communication units operable to generate and send a notification packet containing a server identifier as well as the home terminal apparatus

including storage, extraction and packet generation units operable to store and extract server identifier / address and / or to generate a connection request of claim 22, 23, 24, 28, the port number of claim 23, the application server URL of claim 24, are obvious from D1 (paragraphs [0020] and [0099]) in connection with the state-of-art IP addressing standardised in the IETF Internet Protocol Suite.

- 2.11 The address list notification server including a sending unit operable to send address list notification packets and the home server update unit operable to update the stored application server address data in claim 25 are obvious from the address and name resolution mechanisms (e.g., DNS) being part of the IETF Internet Protocol Suite as well as from SIP REDIRECT (D1, paragraph [0018]).
- 2.12 The direct connection between router and external networks of claim 26 is known from scenarios in which a network is divided into more than one subdomains, a typical application scenario for standard edge routers with NAT functionality.
- 3.1. Independent claims 30, 31 do not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined.

If the intention of the applicant is to seek protection for a computer readable storage medium, only one independent claim (i.e., claim 30) should be filed, which could be formulated as follows: "A computer-readable storage medium storing a set of computer executable program code, which, when executed in a computer, performs the method steps of method claim 29"; whereas independent claim 31 should be deleted.

- 3.2. Some of the features in the apparatus claims 1, 2, 4-8, 12-20, 22-24, 27, 28 relate to a method of using the apparatus ("determines, sends, receives, generates, performs, destroys, controls, extracted, stores") rather than clearly defining the apparatus in terms of its technical features. The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 6 PCT.
- 3.3. Dependent claims 11 and 12 do not meet the requirements of Article 6 PCT in that a feature for which protection is sought is not clearly defined. The claims attempt to define the subject-matter "control unit" in terms of the result to be achieved

("control the apparatus according to control information") which merely amounts to a statement of the underlying problem. The technical features necessary for achieving this result should be added.

- 3.4. The subject-matter of dependent claim 26 seeks protection for the positive feature of a router. Furthermore, the feature "not via an internet service provider" has been added, which may be interpreted to exclude a functionality what is not claimed for the method and the apparatuses, hereby resulting in a lack of clarity.

As negative features respective what is not claimed correspond to so-called "disclaimers", which normally should be avoided, the wording of claim 26 should be amended accordingly (see PCT Guidelines C-III, 4.12).

- 3.5 The terms "using" / "uses" (claims 1, 2, 5, 6, 7, 10, 19, 20, 21, 27, 28, 29) and "directly connected" (claim 26) are vague and unclear and leave the reader in doubt as to the meaning of the technical features to which they refer, thereby rendering the definition of the subject-matter of said claims unclear (Article 6 PCT).

- 3.6. Independent claims 1, 27, 29-31 are not in the two-part form in accordance with Rule 6.3(b) PCT, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

In addition, the applicant should ensure that it is clear from the description which features of the subject-matter of claims 1, 27, 29-31 are already known in combination from the document D1 (see the PCT Guidelines, III-2.3a).

- 3.7. The features of the claims 1, 27, 29-31 are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

- 3.8. The expression "incorporated ... by reference" on page 7 (line 10) of the description should be deleted (see PCT Guidelines C-II, 4.18).

- 3.9. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in documents D1 and D2 is not mentioned in the description, nor are

these documents identified therein.

4. Having regard to the findings above, it is not clear what inventive contribution has been made to the art by the presently claimed arrangement.

If, despite the findings, the applicant is of the opinion that the application does in fact contain a subject-matter that could support a claim that fulfils all PCT requirements, new independent claims should be filed, setting out what is considered to be the inventive contribution to the art.

The application should only include the minimum necessary number (possibly two) of independent claims, with dependent claims as appropriate (Rule 6.4 PCT).

- 4.1. In order to facilitate the examination of the conformity of the amended application with the requirements of Article 34(2)(b) PCT, the applicant is requested to clearly identify the amendments carried out, and to indicate the passages of the application as filed on which these amendments are based (Rule 66.8(a) PCT).
- 4.2. The applicant is requested to file amendments by way of replacement pages in the manner stipulated by Rule 66.8(a) PCT. In particular, fair copies of the amendments should be filed preferably in triplicate.

Moreover, the applicant's attention is drawn to the fact that, as a consequence of Rule 66.8(a) PCT the examiner is not permitted to carry out any amendments under the PCT procedure, however minor these may be.